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25/06Leif [SE/SE]; Lyftvägen 5, S-240 10 Dalby (SE). MALM,
Peter [SE/SE]; Annehemsvägen 37, S-226 48 Lund (SE).

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(74) Agent: ZACCO DENMARK A/S; Hans Bekkevolds Allé
7, DK-2900 Hellerup (DK).

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FONAKTIEBOLAGET L M ERICSSON (publ)
[SE/SE]; SE- 126 25 Stockholm (SE).

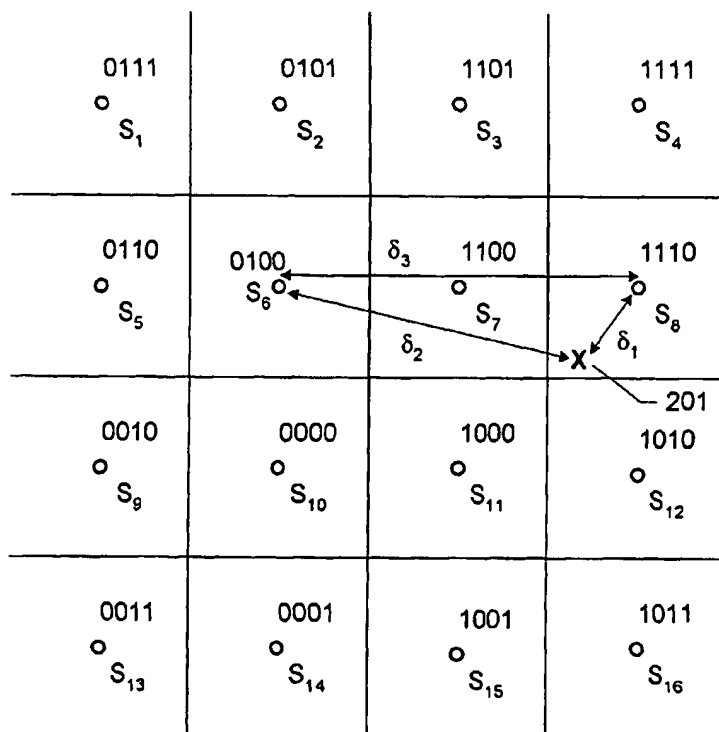
(72) Inventors; and

(75) Inventors/Applicants (for US only): WILHELMSSON,

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(54) Title: SOFT VALUE CALCULATION FOR MULTILEVEL SIGNALS



(57) **Abstract:** A sub-optimal method is disclosed for calculating the reliability values (soft values) for the bits of a multilevel signal. The log-likelihood values are approximated using only the dominant terms, so called max-log approximation, that is for each bit position only the two closest signal symbols of opposite bit value (S_8, S_6) are considered in the sum. The used modulation scheme is 16-QAM together with Gray-labelling. Two versions of approximation are proposed: one version consists of using the two distances between the received value and the two closest symbols of opposite bit value (δ_1, δ_2). In order to simplify and speed up the calculation, the second version consists of using the distance between the two closest symbols (δ_3) to approximate the distance between the second closest symbol and the received value. Furthermore, precalculated results are stored in look-up tables to speed up the calculation. Possible applications are especially bit interleaved coded modulation (BICM) together with soft-input decoding. It is also of interest for TCM and BCM schemes.